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ABSTRACT

The major goal of Project IMPACT (Improve Minimal Proficiencies by Activating Critical Thinking) is to improve student achievement on district tests of basic skill competency. The program seeks to improve student performance on tests requiring critical thinking with emphasis on reading and mathematics. Students involved in Project IMPACT work in a structured environment that accommodates individual styles of learning and are involved in learning tasks that move from the concrete to the abstract. This monograph provides information on: (1) the organization of IMPACT and curriculum materials included in the IMPACT kit; (2) classroom instructional activities; (3) implementation requirements (staffing, staff development, inservice training, technical assistance, cost and availability of materials); (4) history of IMPACT and evaluation procedures used in validating the program; (5) time line for installing the program; (6) addresses of schools or districts that have adopted the IMPACT program; (7) funding sources; and (8) a bibliography. (JD)

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SP 021 647

PROJECT IMPACT

IMPROVE MINIMAL PROFICIENCIES
BY ACTIVATING CRITICAL THINKING
GRADES 7-12

Project Address: Orange County Department of Education
1300-B South Grand Avenue
(Post Office Box 15029)
Santa Ana, California 92705

Staff: S. Lee Winocur, Ph.D., Director
Harland DeBoer Associates
Marie Otto, Evaluator

ABSTRACT

Competencies required for high school graduation by state and local mandates demand more than the mere accumulation of basic mechanical skills. Math problem-solving, reading comprehension and written expression are significantly improved with training in higher level thinking skills.

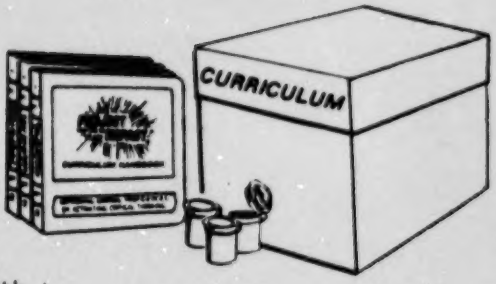
Project IMPACT was developed with the theory that all students with intellectual potential at or near the normal range benefit from instruction in the area of Critical Thinking, and that these benefits transfer from one academic area to another.

The major goal of Project IMPACT is to improve student achievement on district tests of basic skill competency. Additional objectives include: 1) improved performance on tasks requiring critical thinking and independent judgment; 2) improved performance on standardized measures of reading and mathematics; 3) improved instruction through a program of staff inservice education; 4) trained coordination of program installation; and, 5) parent assistance in the home.

Although designed as an alternative approach to remediation of reading and math at the junior and senior high school levels, IMPACT has proven successful with students of wide ranging abilities, from remedial readers to the academically talented and gifted, and is compatible with a wide variety of content areas and grade levels.

Students involved in Project IMPACT participate in learning experiences that: 1) emphasize reasoning and good judgment; 2) structure the learning environment so that all students experience success; 3) accommodate individual developmental stages and cognitive styles of learning; and, 4) require active involvement in learning tasks that move from the concrete to the abstract.

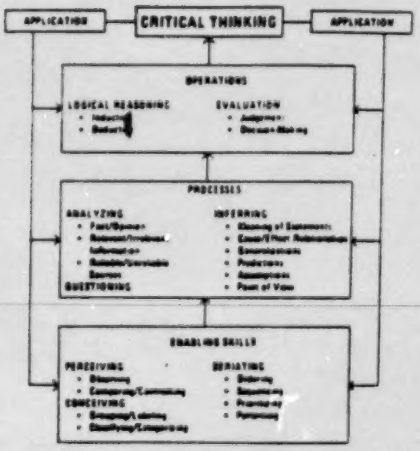
ORGANIZATION AND MATERIALS



The IMPACT curriculum presents the following essential features of effective instruction: 1) skills are clearly identified and placed in a hierarchical sequence of cognitive development; 2) skills are organized into well-developed learning units; 3) skills are presented at both the concrete and formal levels; 4) skills are selected on the basis of compatibiltity with district proficiency tests; and, 5) alternative learning activities are presented.

The materials required to implement the IMPACT instructional program are contained in the IMPACT Curriculum Materials Kit. This kit includes the following:

- Language Arts and Math Curriculum Handbooks contain sixty lessons focusing on aspects of critical thinking skills having an impact on reading comprehension and/or mathematical problem-solving. The Language Arts lessons concentrate on the curriculum areas of reading, writing, spelling, and oral language. Math lessons include the operations of whole numbers, fractions, decimals, and word problems, although the major focus is on whole numbers.



Lesson topics, as identified by the Critical Thinking Universe, include:

- Classifying and Categorizing Information
- Ordering, Sequencing, and Prioritizing Ideas
- Recognizing Patterns and Relationships
- Recognizing Fact and Opinion
- Identifying Relevant and Irrelevant Information
- Identifying Reliable Sources of Information
- Effective Questioning
- Understanding the Meaning of Statements
- Seeing Cause and Effect Relationships
- Making Generalizations
- Forming Predictions
- Making Assumptions
- Identifying Point-of-View
- Logical Reasoning

The lessons themselves are written in an easy-to-implement format. Each lesson identifies the level of the Critical Thinking Universe being addressed, the skill being taught, the student behavioral objective, any prerequisite skills, the level of Bloom's Taxonomy being tapped, and materials and equipment required for the presentation. An introduction to the lesson sets the tone and explains the purpose. It also provides motivation and stresses the importance of the particular skill in relation to situations outside

the classrooms. Finally, a total teaching strategy is outlined, including an introduction of the concept, application of the concept, and practice activities. Worksheets and practice sheets are provided. The students are then guided to drawing conclusions and making applications of the skill. Variations of the lesson are also suggested in the format.

A special emphasis is placed on higher level questioning coupled with instructional strategies for assisting students to organize and verbalize their thoughts. Teachers are trained in specific instructional methodologies incorporated in these lessons during the initial training seminar.

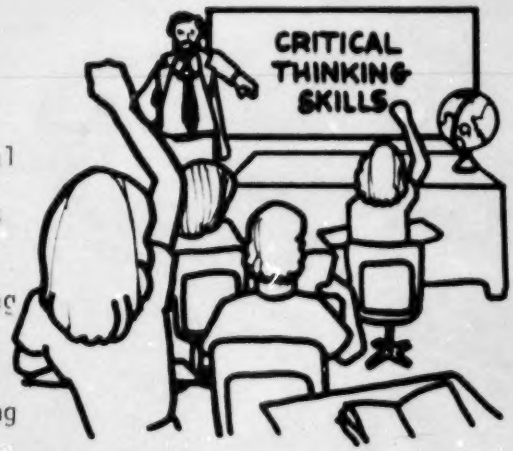
- Four sound filmstrips provide motivational experiences and information related to each of the major categories of the Universe of Critical Thinking Skills, including Enabling Skills, Processes and Operations. One filmstrip presents an overview of the entire program.

- Home Enrichment Learning Packets (H.E.L.P's.) provide reinforcement of selected aspects of skills of critical thinking identified as being the most difficult for remedial students to grasp. These self-paced packets are sent home as supplementary materials to classroom activities. The H.E.L.P. topics include: Reliable/ Unreliable Sources, Questioning, Fact and Opinion, Cause and Effect Relationships, Assumptions, and Point-of-View. The H.E.L.P. materials are individualized learning guides complete with pre and post tests, answer keys and worksheets.

The IMPACT materials can be purchased from the Orange County Department of Education, Post Office Box 15029, Santa Ana, California 92705-0029

CLASSROOM ACTIVITIES

Classroom Instruction. The IMPACT program is very different from the usual basic skills program in that students spend 2/5 of their time (2 of 5 classes each week) working on the Critical Thinking curriculum as opposed to spending that amount of time on the traditional curriculum. As the project develops, teachers are able to see: 1) how well students respond to this approach; and, 2) how effective the approach is in enhancing basic skill deficiencies.



Instruction occurs in small groups and individually, but there are also lessons employing large group guided instruction and/or discussion. In the area of Critical Thinking Skills, the content of the lesson (Perceiving. Seriating,

Questioning, Inferring, etc.) often dictates the instructional methodology.

The study sheets which accompany each lesson have been designed to utilize many different instructional methodologies and are written at various levels of vocabulary and task difficulty in order to provide appropriate learning experiences for students with varying educational backgrounds, interests, and skill achievement levels. Students have the opportunity to learn through performing a variety of activities which include oral and written communication, research, art work, and dramatic presentation which can be used to motivate students with a variety of interests and abilities.

IMPLEMENTATION REQUIREMENTS/PROVISIONS

The project is staffed by math and/or reading teachers regularly employed by all school districts. One teacher is all that is required to successfully implement Project IMPACT in a self-contained classroom at the junior and/or senior high school level. No additional staffing, equipment or facilities are required.

To implement the project, the following areas of concern must be considered:

- Staff Readiness. Secondary teachers usually know their content field well, but often have not been introduced to the learning principles of cognitive development; nor have they been trained to apply these principles to instruction, especially with students of lower reading and math achievement.

  Members of the teaching staff should have exposure to the basic premises which constitute the foundation of this program (i.e., that instruction in Critical Thinking Skills will successfully remediate basic skills deficiencies and enhance the functioning level of the student in all aspects of everyday living). It is critical that both the site administrators and the teachers be knowledgable and supportive in relation to these concepts.

- Staff Development. Once the decision has been made that participation in the IMPACT program is to be desired, initial staff development workshops should be held to make teachers and teacher-trainers familiar with 1) the Critical Thinking Universe; 2) the curriculum units; 3) the H.E.L.P. units; and, 4) appropriate instructional methodology to be used in implementing the curriculum.

It is not necessary that implementing agency teachers become expert in the area of Critical Thinking Skills to the degree that teachers who developed the curriculum were obliged to do. They must, however, understand basic premises to the extent that the relevancy of the lessons and techniques in IMPACT is clear to them. This should then be augmented by an on-going staff development program throughout the year possibily utilizing existing staff inservice structures in a district.

The scope and quality of the staff development program provided by this project has been universally praised by participating teachers. Most have expressed the feeling that if they had participated in no other facet of the program, being exposed to the initial staff development workshops would have resulted in improved teaching skills for them.

Staff development is aimed at helping teachers and administrators expand their awareness of the affects of thinking skills on the remediation of reading, writing and mathematics, as well as assisting them in the effective use of the Project IMPACT materials. Staff development is provided through the following two methods:

- An intensive three-day inservice in which teachers and administrators are oriented to the purposes and strategies of the program by the project trainer. Teachers and administrators:

    - Engage in individual and small group activities designed to focus their attention on their own patterns of thinking so that they will come to model and encourage intelligent behaviors.

    - View lessons related to the instruction of basic skills emphasizing thinking.

    - Model strategies for enhancing, monitoring and assessment of thinking skills.

    - Review the instructional materials and take part in activities designed to promote effective use of the lessons and accompanying study sheets.

    - Evaluate curriculum materials and assessment instruments in terms of thinking skills.

    - Evaluate teaching behaviors related to how well each promote thinking.

  At the close of the three-day inservice program, trainees are asked to assess their knowledge of critical thinking readiness to implement Project IMPACT by completing an eighteen item self-evaluation checklist.

  Monitoring and evaluation of Project IMPACT training occurs during implementation of the project through classroom observations conducted by either the Project Trainer, school instructional leader or team-teachers, followed by individual consultations with each trainee. Using the project-developed Teacher Behavior Checklist, teachers are counseled regarding successful practices observed and suggestions are offered to promote extended use of the program.

- On-going Training and Follow-up Technical Assistance. Successful project adoption requires continuous planning by the partici-

pants, reassessment and refinement of the program, and trouble-shooting. IMPACT training includes one follow-up session and one day of technical assistance to accomplish these essential tasks.

Cost of Implementing the Program: To replicate the project, the adopting agency would need to plan staff development activities with the help of the IMPACT staff, purchase the project curriculum, and provide a system for on-going monitoring, evaluation and support. Program training, monitoring, evaluation and technical assistance are services available to districts upon contractual agreement with the Orange County Department of Education.

Inservice training costs are based on a rate of $150.00 per participant for the three-day (twenty-hour) seminar increased to amounts necessary to meet the individual adoption requirements for technical assistance to the school and/or district.

Materials are available for purchase by those who have received training either from IMPACT staff, or from district project coordinators who have completed the training. The required materials and their costs are as follows:

Project IMPACT Kit	$150.00
Project IMPACT Training Manual	25.00
Project IMPACT Math Curriculum Handbook	40.00
Project IMPACT Language Arts Curriculum Handbook	40.00
Filmstrips/Audio Tapes - set of four (4)	80.00
H.E.L.P. Units (Classroom set of 25 per title):	
Reliable/Unreliable Information	50.00
Assumptions	50.00
Predictions	50.00
Implied Main Idea	50.00
Point-of-View	50.00
Cause/Effect Relationships	50.00
Complete set (one of each of the above titles)	12.00

PROGRAM EVALUATION

Brief History:

Project IMPACT was initiated during the 1979-1980 school year in three Orange County Districts. The project began with a five-week workshop, which provided the conceptual basis for development of the IMPACT curriculum. Professional consultants, considered experts in the field of cognitive development, contributed the theoretical framework for the IMPACT curriculum created by the project staff over the next two years.

The Project IMPACT Critical Thinking Universe, consisting of 23 aspects of critical thinking pertinent to a program of this type, was developed and appropriate units were written. The lessons were implemented on a trial basis in the classrooms during the first project year. As each lesson was implemented, an extensive lesson evaluation form was completed and submitted to the project evaluator for analysis.

This analysis served as a catalyst for group interaction during workshops held the second summer. The Universe was revised and each lesson was considered for approval as written, approval with revision/refinement, or rejection. The results of these efforts were a refined curriculum available for further classroom implementation/evaluation/refinement during the second project year.

During the third project year, existing districts were joined by two new districts. The results demonstrated that IMPACT is effective in sites with very different demographics and philosophies.

Participants:

Students participating in this project were selected on the basis of having failed to pass some portion of their district's proficiency tests. The students were in grades 7, 8, and 9. In each district, a group of comparison students was chosen based on similarity of the population at the comparison schools to students at the project schools in that district.

Assessment Instruments:

Three kinds of instruments were used for the pre/post test measurement of pupil progress. These were district proficiency tests in reading and math, a test of Critical Thinking Skills, and standardized tests of reading and math (CTBS).

The intent of the program was to assist students in meeting the proficiency requirement of each district. The standardized tests were added to offset the disparate nature of the proficiency tests from district to district.

Summarized Data:

Project students showed overall improvement of nineteen percentage (19%) points compared to four percentage (4%) points average growth for the comparison group in district reading proficiencies. Project students showed overall

improvement of sixteen percentage (16%) points compared to three percentage (3%) points average growth for the comparison group in district math proficiencies. This growth is illustrated in Figures 1 and 2 below:

FIGURE 1

SUMMARY OF DISTRICT PROFICIENCY TEST SCORES IN READING

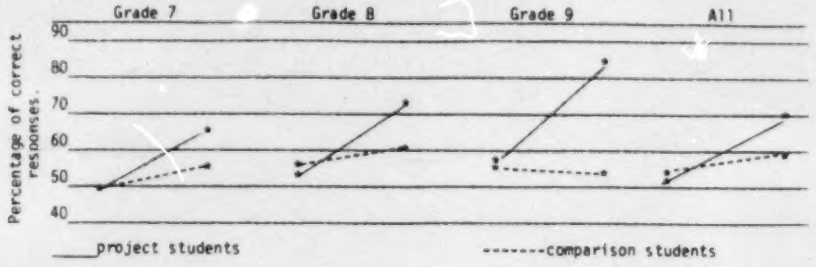
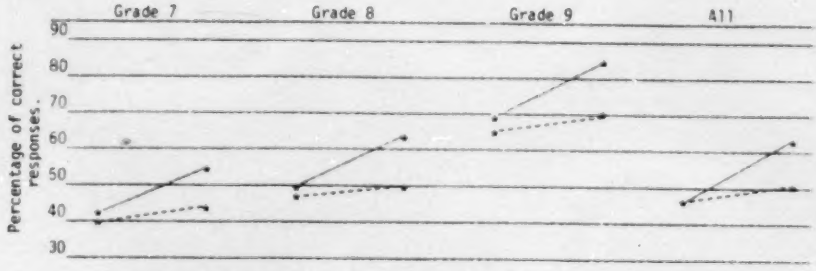


FIGURE 2

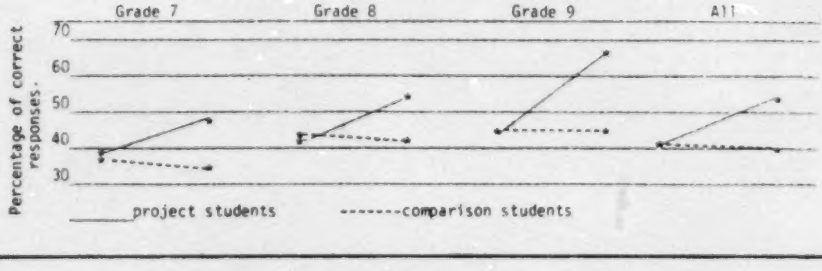
SUMMARY OF DISTRICT PROFICIENCY TEST SCORES IN MATH



The Cornell Critical Thinking Test was administered pre/post to both project and comparison groups with the results shown in Figure 3 below:

FIGURE 3

SUMMARY OF GAINS IN CRITICAL THINKING SKILLS



Standardized achievement tests were also administered to project and comparison students. The subtests given were the Reading Comprehension Test (Subtest 2) and the Math Concepts and Application Test (Subtest 7) from the Comprehensive Tests of Basic Skills (CTBS) battery.

A comparison of grade equivalent scores in reading indicates that the project student gained 27 points compared to 11 points gained by the comparison group. Translated into grade equivalent scores, project students in all three grade levels showed growth equivalent to more than a full year in the seven-month period during which they were pre/post tested. Comparison students averaged half a year's growth or less at each grade level.

In Math, project student growth exceeded comparison student growth at all levels except the 8th grade, in which the growth record was identical for both groups. Overall, the project group showed a mean growth of 47 Scale Score points, while the comparison group showed a 21-point gain. This was equivalent to a difference of close to two years' growth for project students compared to a seven-month growth for the comparison group.

TIME LINE

The following time line is suggested for installation of the program at the junior or senior high school levels with Math and/or Reading classes:

ACTIVITIES/MONTHS	1	2	3	4	5	6	7	8	9
1.0 Identify students and teachers	X								
2.0 Provide Staff training	X								
3.0 Acquire IMPACT Curriculum materials	X								
4.0 Pre-test students		X							
5.0 Implement program		X	—	—	—	—	—	—	X
6.0 Monitor instruction			X	—	—	—	—	—	X
7.0 Provide technical assistance			X	—	—	—	—	—	X
8.0 Post-test students									X

VISITATION OPPORTUNITIES

The following schools or districts have adopted the IMPACT program and are available to visitors at the present time:

IRVINE UNIFIED SCHOOL DISTRICT

Venado Middle School
4 Deerfield Avenue
Irvine, CA 92714
John Tennant, Principal
714/552-4771

Frances Antenore, English
Belinda Dennis, Math
Miriam Johnson, English
Ginny Powers, Math

NEWPORT-MESA UNIFIED SCHOOL DISTRICT

Costa Mesa High School
2650 Fairview Road
Costa Mesa, CA 92626
Donald Champlin, Principal
714/556-3344

Joan Allen, English
Jim Stoia, Reading
Darlene Landis, Math

Maude B. Davis Middle School
1050 Arlington Drive
Costa Mesa, CA 92626
Ralph Freitag, Principal
714/556-3430

Barbara Osborne, Reading
Sally Strobl, Reading/Math

OCEAN VIEW SCHOOL DISTRICT

Vista View School
16250 Hickory Street
Fountain Valley, CA 92708
Dr. Patrick Monahan, Principal
714/842-0626

Claudette Beaty, Reading
Ginny Mohs, Math

CONTACT PERSON

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Director, Project IMPACT
Orange County Department of Education
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OTHER INFORMATION

A major strength of this project is its ability to fill a nationally recognized educational need in a cost-effective, program-effective manner. Replication of the project presents no serious problems nor requires any heroic efforts on the part of either teachers or administrators.

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Some possible adaptions that have proven successful are as follows:

- implementation in both math and reading classes, with a team-teaching approach to avoid unintended repetition of the same lesson with students twice (it is often good to use repetition for purposes of reinforcement)
- implementation in either the math program or the reading remedial program
- implementation in regular classes in small systems in which there is no pull-out remedial program
- implementation in regular or gifted/talented classes in which the teacher feels the materials will meet the class objectives in this area

POSSIBLE ALTERNATIVE FUNDING SOURCES

AB 3408/AB 65

- Requires testing of Basic Skill proficiencies

  Requires remediation
- Requires opportunities for critical thinking and independent judgement

AB 551

- Staff Development

Block Grants

- Chapter I
- Chapter II

Investment in People Program

- Math Component

Gifted and Talented Education

- Leadership Training
- Critical Thinking

Private Funding Sources

- Bank America Foundation
- Community Foundation
- Community Service Groups
- Parent/Community Organizations

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